Untangling diffraction intensity: Modulation Enhanced Diffraction on ZrO_2 powder

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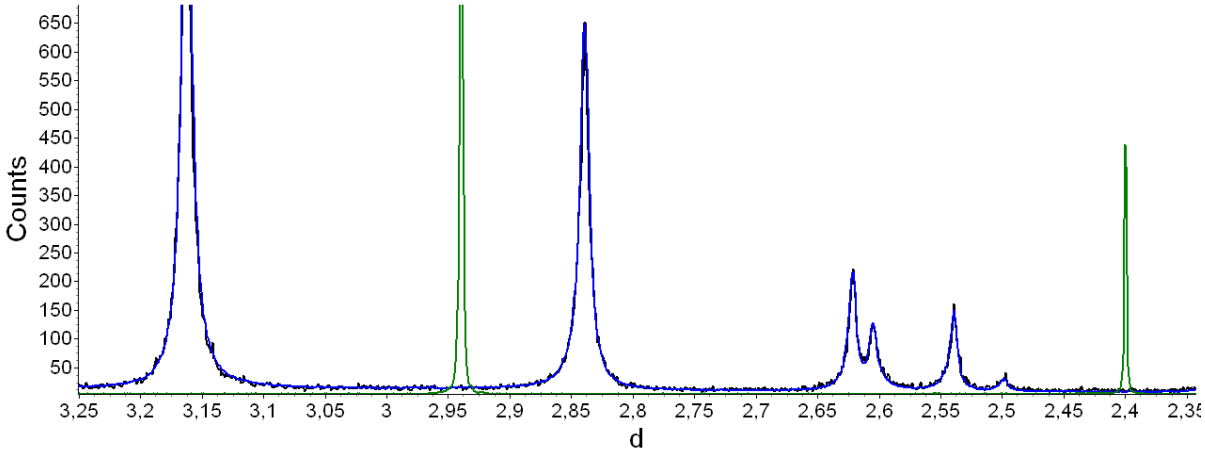
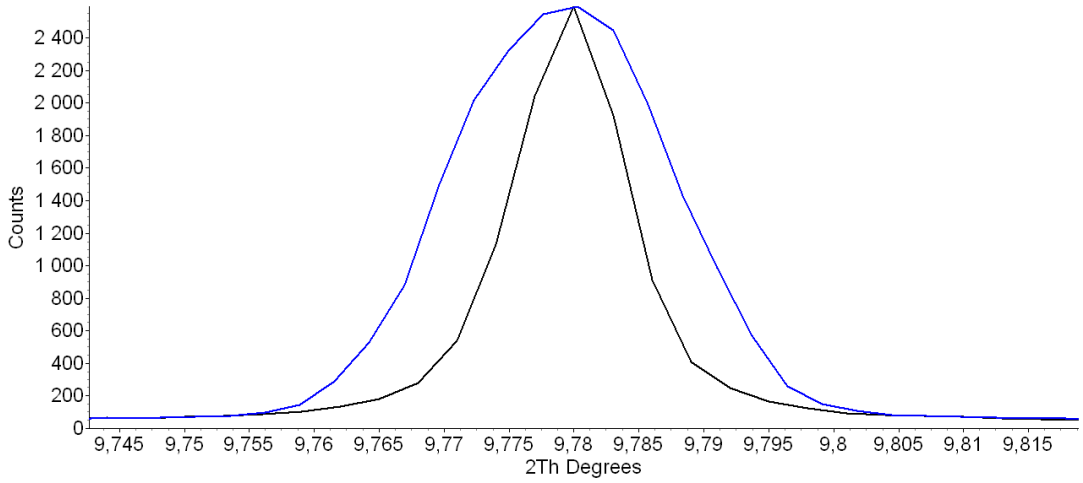
Supplementary material:

Comparison between Pilatus 300K-W at 1141mm behind the sample and the High Resolution Powder Diffractometer installed at SNBL-BM01B.

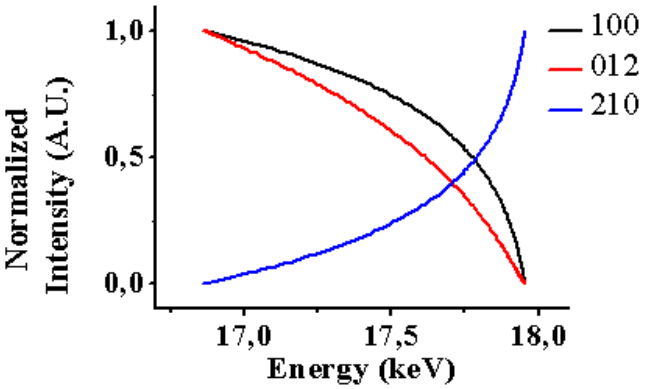


Black curve is the ZrO_2 sample measured in a 0.3 mm capillary on the HRPD instrument at 0.50114Å. Blue curve is the same capillary measured on the 2 dimensional Pilatus detector with a wavelength of 0.73536Å. For clarity the ultimate resolution of the HRPD diffractometer is shown with an LaB6 lineshape standard at 0.50114Å (Green curve).

Comparison between Peak resolution of LaB6 standard of the Pilatus (blue) and the HRPD (black) detector. Wavelength 0.50114Å, capillary 0.3mm, distance 1141mm.



HRPD FWHM ~0.01 degrees Pilatus FWHM ~0.02 degrees.



Three structure factors as a function of Energy. When comparing with Figure 3 in the paper, one notices the importance of using ‘scan number’ as a variable for the demodulation technique.